

2.2 BICONDITIONAL STATEMENTS

When a conditional statement and its converse are both true, you can write them as a single biconditional statement.

Biconditional Statement: statement that contains the phrase "if and only if", abbrev. "iff"

Ex 1 Write the definition of a right angle as a biconditional statement.

RIGHT ANGLE

DEFINITION: If an angle is a right angle, then ^{the measure of the angle is 90°} ~~it is a right angle~~

CONVERSE: If ^{the measure of an angle} ~~an angle~~ is 90° , then it's a right angle.

Biconditional: An angle is a right angle if and only if the measure of the angle is 90° .

The following conditional statements are true. If the converse is also true, combine the statements as a biconditional. If the converse is false, provide a counterexample.

① If two angles have equal measure, then they are congruent.

Biconditional: Two angles have equal measure if and only if they are congruent.

② If $x=4$, then $|x|=4$.

False

~~if~~ $x = -4$ ~~then~~

Converse: If $|x|=4$, then $x=4$.

If $|-4|=4$, then $x=4$. **FALSE**

③ IF two angles form a linear pair, then they are supplementary.

False counterexample for converse:

two nonadjacent supplementary angles.

④ IF three points are collinear, then they lie on the same line.

Biconditional: Three points are collinear if and only if they lie on the same line.

Homework: p. 83 #19-28 all, 30